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ABSTRACT

This set of information sheets is intended to improve practice in special education through technology, media, and materials. The first information profile introduces NCIP (the National Center to Improve Practice), gives an example of how one special education administrator uses NCIP resources, and offers suggestions for facilitating NCIP workshops. The second profile, on writing with word prediction software, addresses how word prediction helps students with motor impairments and learning disabilities, offers the stories of two students successfully using word prediction, identifies skills students need to use word prediction, and lists features of different word prediction software programs. The third profile, on using telecommunications networks, considers ways students with disabilities can benefit from these networks, describes successful use by one child, and offers an example of a special education class using electronic mail and examples of network postings on the DO-IT (Disabilities, Opportunities, Internetworking and Technology) network. The fourth profile, on organizing information with software tools, discusses "Inspiration" software to help students create concept maps and outlines, examples of students using Inspiration, information about an Oregon program helping students use computer-based study methods, and strategies for using Inspiration in the classroom. The fifth profile, on the use of videotapes to improve reading and writing skills, gives examples of the use of video and captioning to teach literacy skills, writing, and reading comprehension. (DB)

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NCIP Profiles, 1-5, 1995.

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NCIP Profiles 1
Spring 1995

Read Me First

"Working with NCIP" – a regular feature of NCIP Profiles – will acquaint you with NCIP's resources and provide you with information about how to use them. Once you've read this, review the other print and video profiles to learn more about integrating technology, media, and other materials into special education classrooms.

What's Inside

- **Meet the members of the NCIP community**
- **A profile about one special education administrator who:**
  - **incorporates NCIP resources in meetings**
  - **participates in NCIPnet discussions**
  - **uses NCIP resources to support professional development**
- **Suggestions for facilitating an NCIP workshop**
- **Sample postings from NCIP community members**

NCIP is the National Center to Improve Practice in special education through technology, media, and materials.

Working with NCIP

The NCIP community is made up of a variety of members including parents, teachers, administrators, college faculty, educational consultants, researchers, special education advocates, and policymakers. But no matter where these members live or work, they all have one thing in common – a dedication to finding ways that technology can meet the needs of students with disabilities.

You can easily meet and stay in touch with other NCIP community members around the country via NCIPnet, the center's telecommunications network. Consider using NCIPnet to: contact parents in advocacy groups, talk to people at a technology center about their work, ask a special education teacher about teaching strategies, take advantage of expert knowledge during an online event, or for any other purpose that will assist you in your important work.

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Special Ed Administrator Finds Myriad Uses for NCIP Resources

Since October 1994, special education administrator Maryann Morran has widely used NCIP resources in her work with educators in the Concord, Massachusetts school district. Increasing her awareness about the kinds of materials available for special education teachers and students with disabilities, NCIP resources have also supported Maryann as a strong advocate for technology in the schools.

Using NCIP Video Profiles

During the fall meeting of Concord's Adaptive Technologies Study Group, Maryann showed *The "Write" Tools for Angie*, an NCIP video profile that features a high school student who is blind using Braille 'n Speak™ in regular-education classes. The group consisted of special-education and regular-education elementary school teachers who meet four to six times each year to become familiar with how to use various technologies in the classroom.

Because the meeting focused on strategies for promoting successful inclusion, Angie's story was of particular relevance to the teachers, some of whom have students with varying levels of visual impairment. In the post-viewing discussion about inclusion, teachers were impressed with Angie's ability to use technology to keep pace with the other students. The elementary-school teachers recommended that Maryann show the video at the regional high school because it clearly demonstrated how technology combined with good teaching can allow students with significant disabilities to partake in a rigorous program. Maryann is taking their advice and at an upcoming meeting plans to pair *The "Write" Tools for Angie* with *Multimedia and More*, an NCIP video about how multimedia tools in a high school English class benefit a student with a learning disability and attention deficit disorder.

Using NCIPnet

Maryann takes NCIPnet with her to meetings, either by bringing the disk with the program and demonstrating how to use the network, or by taking along relevant documents downloaded from the network. After viewing the Angie video with teachers in the Adaptive Technologies Study Group, for example, she logged on to the network and showed teachers how to gather information and resources about students who are visually impaired.

Maryann has also found that NCIPnet discussion folders – which include postings about a variety of issues and subjects – are a rich source of current information. When teachers in her district have asked her about general topics like inclusion, or specific issues such as whether to teach keyboarding to a second grader, Maryann logged on to NCIPnet. On the network she found discussion folders on keyboarding and inclusion and downloaded relevant materials.

At Concord, NCIPnet also has become a gateway for access to the Internet discussion forums about special education issues. For example, to gather information for the school's speech and language therapists who are interested in cochlear implants, Maryann accessed Internet through NCIPnet and retrieved the DEAF-L Internet list. From the list, she downloaded several entries by parents of deaf children about how they dealt with the issues involving cochlear implants and the use of sign language. Using the Internet, she also discovered reprints of the National Association of the Deaf's position papers which she later disseminated.

During meetings with educators in her school district, Concord special education administrator Maryann Morran (far right) often uses NCIP resources when discussing issues concerning students with disabilities.

NCIP and Professional Development

As part of Maryann's job as a change agent, she is responsible for disseminating information and identifying other teachers who can also act as change agents in their local schools. One reason she demonstrates NCIPnet at meetings is to encourage the "next generation" of change agents to contact NCIP and obtain their own accounts on the network.

Maryann has also found that NCIPnet supports her own professional development. Providing a neutral arena for discussing issues involving technology cost and effectiveness, the network is a safe place to get feedback from

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parents outside her district. In contrast, however, when talking to parents in her own district, Maryann reflects, "You have to weigh everything you say. Technology can be so expensive and you want to make the right decision."

Communicating with parents across the country also offers Maryann the opportunity to gather information that helps her set better short- and long-term goals for students with severe disabilities, such as Downs Syndrome. "The best evidence for learning about how effective public schools can be for children is by hearing from the children who have completed school and their parents. NCIPnet really helps with this," Maryann said.

If you have any questions or comments for Maryann, you can reach her on NCIPnet.

Did You Know?

- You can make photocopies of any of NCIP's print profiles.
- You can duplicate any of the videos.
- NCIP video profiles are available both captioned and described, and NCIP print profiles are available in large print, Braille, and electronically.
- We have a separate forum on NCIPnet called "Working With NCIP" where Change Agents and others can share ideas.
- Denise Ethier at (617) 969-7100, ext. 2422 is ready and willing to take your phone calls requesting technical assistance.
- You can download any of the materials from NCIP Profiles Library and make as many photocopies as you like.

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Facilitating an NCIP Workshop

Dear Change Agents,

Last fall, NCIP conducted a "Get to Know NCIP" night at EDCO, an education collaborative linking 22 Massachusetts districts. Attendants included 30 regular education and special education teachers. During the program, I facilitated a short workshop for 10 teachers about how to use materials from the Fall edition of NCIP Profiles. Below is a summary of the session that you may find helpful if you decide to run an NCIP workshop, demo, or training.

Best of luck,

Judy Zorfass

NCIP Workshop Summary

I. Setting a Context (approximately 10 minutes)

- The session began with a review of NCIP Print Profile 3, *The "Write" Tools for Students Who Are Visually Impaired.*
- We first took a look at the information on the first page that introduced the importance of feedback in the writing process. Then we reviewed the glossary on the back page of the profile and discussed any terms that were unfamiliar.
- After discussing terms, we looked at the stories and photos on pages 2 and 3 about students with visual impairment who use technology in mainstream classes.
- Finally, we reviewed the information on page 2 about the importance of family support, and the group members discussed some of their own experiences while working with families.

II. Showing the Video (approximately 15 minutes)

- Before showing *The "Write" Tools for Angie* – the video accompanying NCIP Print Profile 3 – participants were asked consider the following question when viewing: *What can you extract from this video that is relevant to your work?*
- Participants screened *The "Write" Tools for Angie*, which ran approximately 8 minutes.
- After watching the video, the group discussed their answers to the preview question. One teacher summarized many of the teachers' remarks this way: "The Angie vignette highlighted issues of independence, organization, and self-esteem which are relevant to all students with disabilities."

III. Follow-Up Discussion (5 minutes)

- During the last part of the session, we discussed ways in which the participants could disseminate the print and video profiles. One teacher suggested she might show the video to students. Another planned to show it at a parents meeting.

At an NCIP workshop, educators viewed *The "Write" Tools for Angie*, a video featuring Angie Bourdeau (pictured), a high school sophomore who is visually impaired.

The Community Talks

Excerpts from messages posted on NCIPnet in the *Working with NCIP* folder

Margaret Brandt

Thursday, November 10, 1994
Working with NCIP Item
From: Margaret Brandt
Subject: How I Use NCIPnet
To: Working with NCIP

I am the parent of a son with LD who has ADHD. He's part of an inclusion program. I've created a three-ring binder of information downloaded from NCIPnet about appropriate technology, learning styles, ADD, inclusion, laptops and just about anything that interests me. I give all the inclusion materials to my son's teacher.... I pass out information at Parent Advisory Council (PAC) meetings. Other parents ask me to find out specific information and pass it on to them.... When I went to an ADD support group meeting, people stayed around until after 10:00 p.m. just to get a look at my downloaded conversations and informational articles on ADD, technology, software, and, especially, behavior management.... People come to the house just to browse though my binder. Teachers have asked to take it home for the weekend just to get a chance to look at it more carefully. It has become a resource for many parents and educators in my area.

At Parent Advisory Coucil meetings, Margaret Brandt (left) shares information with other parents that she downloads from NCIPnet.

Shirley Brown

Monday, December 19,1994
Working with NCIP Item
From: Shirley Brown
Subject: AlphaSmarts
To: Working with NCIP

While browsing the Profiles Resource Library (under laptops), I read about AlphaSmarts™ and was impressed by its affordability. I printed all of the information for the principal (who also serves as sped director) and the technology coordinator. Now we're considering writing a grant to purchase this tool. Also, a special needs teacher was encouraging a parent of a fifth grade student with reading problems to try some repeated reading strategies at home. I downloaded the discussion on repeated reading and sent this home to parents with other information.

Lori DiGisi

Wednesday, November 23,1994
Working with NCIP Item
From: Lori DiGisi
Subject: Using Profiles with College Students
To: Working with NCIP

I currently teach two courses in Special Education at Boston University. In an effort to help my students see that if they think creatively, there are ways that they can help students with disabilities learn their "mainstream" subject matter, I showed them the vignettes on the NCIP profiles video.... Angie did what all my stories, experiences, and cases could not, she showed them what a person with a disability (that they see as very debilitating) could do. Both classes were so impressed and I think relieved. They could now envision possibilities for a person with a disability in their mainstream classrooms....thank you for capturing such a poignant picture of how students with exceptionalities can succeed and excel if teachers provide them with the right tools!

Talk Back

We are interested in hearing your honest reactions to our print and video materials so that we may improve them. You can share your candid opinions in "Working with NCIP" (a discussion folder on NCIP), by phone, fax, or "snail" mail (anonymously if you'd like).

For more information, contact:

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NCIP Profiles 2
Spring 1995

Watch *Jeff: With Expression* on the accompanying videotape.

What's Inside

- **The "ins" and "outs" of word prediction software**
- **How word prediction helps students with motor impairments and learning disabilities**
- **Stories of two students successfully using word prediction**
  - **A young adult with cerebral palsey who uses word prediction software to write more quickly**
  - **A high-school freshman with speech and learning disabilities who has developed independent writing skills using word prediction**
- **Skills students need to use word prediction**
- **Features of different word prediction software programs**

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Writing with Word Prediction Software

Students with disabilities have trouble writing when their ability to generate text cannot keep pace with the flow of their ideas. Some students simply cannot retain ideas in their memory long enough to express them coherently in writing. Others have difficulty with spelling or with the motor demands of handwriting and keystroking. Some students with more significant motor impairments use adaptive methods for writing that can also slow down the process.

Many students with disabilities who confront these obstacles can be assisted by word prediction, software that reduces the number of keystrokes necessary for typing words.

Here's how it works: After a student selects each letter, a list of words appears on the screen beginning with the letter or letter sequence typed. Each time a letter is added, the list is updated. When the desired word appears in the list, students can choose the word and insert it into their text with a single keystroke (each word is numbered so students need only type in a number when the right word appears).

For example, if a student wants to write the word *tomorrow*, first she selects a *t* and the following list of common *t* words appears in the word prediction window below:

Let's meet at the park t

Word Prediction Window

1 talk 2 that 3 the
4 this 5 them 6 they

Since her target word does not appear in this list, the student types *o*, the next letter in *tomorrow*, and a list of *to* words appears in the word prediction window (bottom left).

Let's meet at the park to

Word Prediction Window

1 today 2 tomorrow 3 tonight
4 topic 5 toward 6 town

Now that the target word has appeared, the student selects the number 2 key and *tomorrow* is inserted into the text followed by a space. The number of keystrokes for writing *tomorrow* has been reduced from nine to four.

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Jeff Goes to Bat with Word Prediction

Students with learning disabilities who are poor spellers often have limited writing vocabularies because they avoid words they can't spell correctly. Other students who may be more adventurous with their word choice find that spell check programs frequently do not generate appropriate choices.

By providing writers with immediate spelling assistance, word prediction can make the entire writing process less stressful for students with learning disabilities.

Meet Jeff

Jeff is an energetic high school freshman with speech and learning disabilities. Writing with a pen or pencil has always been difficult for Jeff. His grasp is awkward and his letter formation is slow and inexact. With limited spelling skills, Jeff has consciously avoided using longer words. Because of his learning disabilities, Jeff also has difficulty organizing his ideas and expressing them in complete sentences.

Using a laptop with word prediction software, Jeff – a high school freshman with learning disabilties – has greatly expanded his writing vocabulary.

Boston Red Sox History: An Excerpt from Jeff's Report

In 1890 some athletes formed the Players League, which did very well financially. This forced the eight National League teams and four teams from the American Association to join together for survival. In 1901 the American League declared itself a major league, moved into National League cities, and raided the older league for players. Charter members of the American League were Chicago, Boston, Detroit, Philadelphia, Baltimore, Washington, Cleveland, and Milwaukee. There was a lot of anger between the two leagues. The results of the eventual truce was the World Series, which has been played every year since 1903 – except in 1904, when the New York Giants refused to meet the upstart American League champions from Boston.

Throughout elementary school, Jeff relied on his resource room teachers and his parents to physically write for him. As Jeff dictated his written work, these adults often helped him translate his sometimes disorganized thoughts into coherent language. While this assistance gave Jeff the opportunity to participate in mainstream classes, it also interfered with his ability to develop independent writing skills.

With the help of technology and good teaching, Jeff is now becoming an independent writer. To compensate for both motor and spelling difficulties, he is currently using a laptop computer with a word prediction program that offers speech feedback. Because his language skills are underdeveloped, writing is still a slow process for Jeff. With the word prediction program, however, he is now able to answer his homework questions independently and write his own letters, stories, and reports.

At the end of the school year, Jeff's eighth grade English teacher asked her students to each choose a subject of personal interest, research it, and prepare an oral report for the class. In the past, Jeff had dreaded such assignments because of his writing and speaking difficulties. But now he had a tool – word prediction.

Jeff carefully researched the history of the Boston Red Sox and wrote an outstanding report, full of fascinating and little-known facts.

When it was Jeff's turn to read his report, he walked to the front of the class, turned on his laptop, and presented his work sentence-by-sentence through the speech synthesizer. Jeff's classmates were intrigued with the information, but even more impressed by Jeff's writing talents.

Watch *Jeff: With Expression* on the enclosed NCIP videotape.

Skills Needed to Use Word Prediction

Students who use word prediction programs must have some phonetic spelling ability. To ensure that the correct word appears on word prediction lists, students must be able to correctly identify its first few letters.

Students also need to read well enough to see the difference between words that look similar on prediction lists. For students who are unable to read, some programs include a speech feedback component that "reads" word prediction lists aloud.

Students who use word prediction programs also must be able to flexibly shift their attention back and forth between the keyboard (or other alternative access device) and the word prediction lists.

Using Word Prediction Software, Students with Motor Impairments Have the "Write" Stuff

Tony, a young adult with cerebral palsy (right), has significantly improved his writing skills thanks to assistance from his tutor (left) and word prediction software.

Many word prediction programs were first developed for students whose ability to select keys was severely limited by motor impairments.

Though some students with motor impairments can select letters directly from the standard keyboard or from adaptive keyboards, the going is often slow. For others who use alternative access methods such as switches or trackballs, writing can be especially time-consuming. For these students, word prediction decreases the gap between generating ideas and capturing them in writing by reducing the number of key selections necessary for writing words.

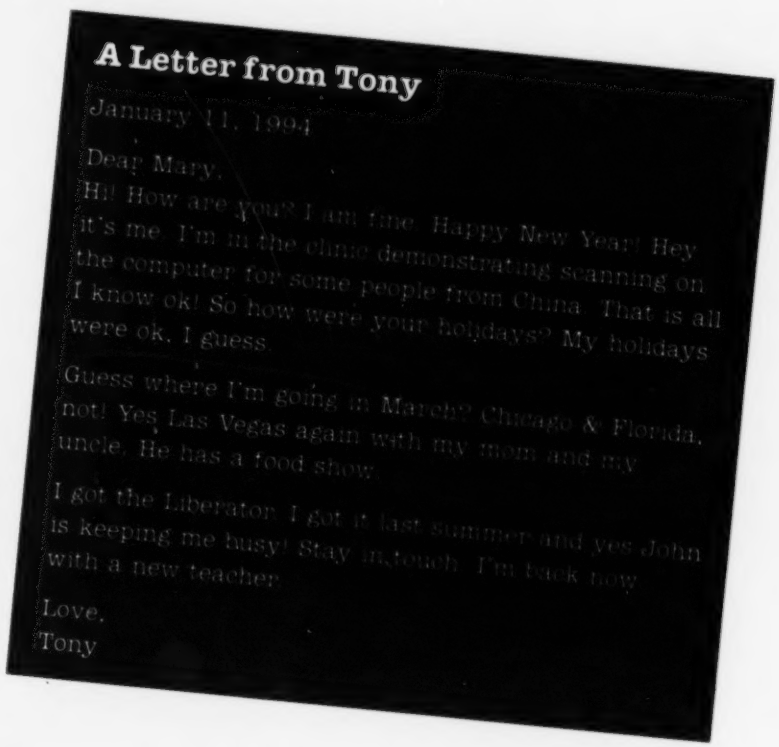
Meet Tony

Tony is a young adult with cerebral palsy who loves rock 'n' roll and writing letters to his friends. He uses a wheelchair and communicates with a portable communication device with speech output. Tony uses a computer by pressing a switch on his wheelchair pedal with his left foot. He uses a word prediction program with a built-in scanning array.

Here's how Tony writes: The scanning array appears on the monitor and contains all the letters and keyboard functions arranged in rows. Tony watches carefully as each row in the scanning array is highlighted in succession. When the row containing the letter he wants to select lights up, he presses the switch with his foot. Tony then watches again as each letter in the row he has chosen is highlighted. When his target letter is lit, he presses the switch again and the letter appears on the monitor.

Scanning has made writing accessible for many students with significant motor impairments. The process, however, requires considerable cognitive attention for each key selection and can be physically taxing when used over a period of time. Word prediction is a great resource for Tony because it minimizes the number of selections he must make from the scanning array.

With the help of word prediction software and weekly tutoring sessions, Tony's written language has blossomed. When he first began working with his tutor his sentences contained just a few words. For example, to communicate *I went to listen to music with my sister Christine on Saturday night*, Tony wrote *Music Saturday Christine*. As Tony has become more adept at using word prediction, his sentences have become more complex and his writing reflects his outgoing personality and unique sense of humor.



A Letter from Tony

January 11, 1994

Dear Mary,

Hi! How are you? I am fine. Happy New Year! Hey it's me. I'm in the clinic demonstrating scanning on the computer for some people from China. That is all I know ok! So how were your holidays? My holidays were ok, I guess.

Guess where I'm going in March? Chicago & Florida, not! Yes, Las Vegas again with my mom and my uncle. He has a food show.

I got the Liberator. I got it last summer and yes John is keeping me busy! Stay in touch. I'm back now with a new teacher.

Love,
Tony

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Word Prediction Program Features

Various word prediction programs are available for Apple®, Macintosh®, and IBM® compatible computers. The usefulness of any particular program will depend on how well that program's features meet the student's individual needs.

Both Tony and Jeff use an MS-DOS word-processing program that integrates word prediction. Other word prediction programs are designed to work in conjunction with various word processing software. The following list describes additional features that distinguish different word prediction programs.

Abbreviation Expansion

Some word prediction programs enable users to encode their name, assignment headings, or other language they frequently use. Once encoded, a simple keystroke combination can retrieve these messages. For example, if Jeff wants his name to appear in the text, he presses the Control key and the letter *J*.

Prediction Methods

Some programs predict solely on the basis of spelling, while others also consider the words that have come before in the sentence. For example, if the word being typed follows an article like *the*, only nouns and adjectives will be predicted. This type of grammatical prediction can be more efficient and speed up the writing process.

List Updating

Most programs can "learn" a student's vocabulary and tailor word prediction lists to that student's word usage. This way, the program is more likely to first predict words that a student most frequently uses. In some programs, lists are modified automatically, while in others, users can decide whether they want lists updated or not.

Prediction Window Customizing

Some programs have prediction lists that appear with a set number of words in a fixed-size window in a specific location on the screen. Others allow users to customize the size, the screen location, and the amount of words in the window.

Topic-Specific Lists

Many word prediction programs allow users to create and retrieve word lists relating to a particular topic. For example, when Jeff wrote his report on the Boston Red Sox, he and his teacher created a list of words related to baseball such as league, Chicago, and championship that he could retrieve while working on the assignment.

Word Modification

Many programs allow users to add suffixes or other modifications to words with a single keystroke. For example, Tony is able to change *story* to *stories* by choosing *story* from the word prediction list and then a special plural function from the scanning array. This feature keeps word prediction lists uncluttered by different forms of the same word.

Speech Feedback

To provide additional support for students while they write, some word prediction programs also have synthesized speech output. Because Tony's and Jeff's reading skills are somewhat limited, both rely heavily on this feature to help them monitor the structure and meaning of their work.

Other Adaptive Features

Some programs also include other features particularly suited to the needs of students who are physically impaired. These features include scanning arrays for switch users (see **Meet Tony** on page 3) and a "latching" feature that allows people who type with a single finger or a pointer the option of typing two-key combinations, one key at a time. Some programs also allow the user to adjust the sensitivity of the keyboard so letters are not repeated if keys are not quickly released.

More About Word Prediction on NCIPnet

- A comparative listing of word prediction programs
- A list of articles and other print materials about word prediction with detailed abstracts
- Detailed descriptions of word prediction programs and their features
- Vignettes about students with disabilities who use word prediction
- Word prediction research and classroom project descriptions
- Online support and assistance from other teachers, parents, administrators, and consumers

NCIP

For more information, contact:

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NCIP Profiles 3
Spring 1995

What's Inside

- Ways in which students with disabilities benefit from using telecommunication networks
- How a telecommunications network was "a key to a treasure chest" for a seventh grader with muscular dystrophy
- A profile of a special-education class sharing their science research with a regular education class via e-mail
- A sample of network postings from students participating in DO-IT! (Disabilities, Opportunities, Internetworking and Technology)
- More on NCIPnet about telecommunications

Merging onto the Information Superhighway

Equipped with a computer and a modem or an Internet link, students can broaden their communication horizons by crossing barriers of time, distance, and culture. In this expanded universe, one need only turn on his or her computer to gain access to people and resources throughout the world.

Because computer networks open up a range of new communication options, students with disabilities can particularly benefit from this kind of unequaled access. Using telecommunications networks, students with disabilities have the opportunity to:

- communicate in a way that makes their disability "invisible"
- share experiences and trade practical suggestions with others who have similar disabilities
- exchange useful information with disabled and non-disabled peers, teachers, mentors, and others

Cotting School students access computer networks using a variety of adaptive devices. Pictured is Mark Hutchinson using a head stick to type a message.

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Prodigy™ is "Key to Treasure Chest" for Shannon Lilly

Shannon Lilly, the student profiled in the following story, passed away in 1994.

For Shannon Lilly, discovering the on-line network Prodigy, was "like finding a key to a treasure chest," according to her mother, Jeanne Lilly.

"She found sources of creativity and challenge, sources of information, recreation, and socialization, sources which boosted her self-image, and a sense of independence and control," said Jeanne Lilly of her daughter, a seventh grader with limited mobility due to muscular dystrophy.

Ever since the first grade, Shannon had been mainstreamed in the Brockton, Massachusetts Public Schools. As her motor functions became increasingly impaired, Helen Virga, the Brockton assistive technology specialist looked for technologies that would allow Shannon to communicate more easily and to continue to participate in her class assignments.

Shannon was not able to use a standard keyboard because of her limited mobility, so Helen ordered a Macintosh® Powerbook to mount to Shannon's power wheelchair. Using a trackball and KE:NX™ (adaptive software with an on-screen keyboard display), Shannon was able to have access to a wide range of computer applications. While the adaptive hardware and software provided access, it was the computer network Prodigy which opened up a range of new possibilities for Shannon.

In the four-month winter flu season, Shannon was tutored at home because of her tenuous health. During this time, it was often difficult to fill up the hours of the day with activities that were engaging, stimulating, and interactive, and even more importantly, tasks that Shannon could do without assistance. Once Shannon discovered Prodigy, this problem was solved! Suddenly there weren't enough hours in the day for Shannon, and her mother often had to force her to log off and go to bed.

Shannon used Prodigy in a variety of ways. She read the news screen on a daily basis, taking particular enjoyment in being the first in the family to know and share the news of the day. Shannon also participated in a number of Prodigy bulletin boards. The Baby-sitters Club was one of her favorites – she was a club member, read stories online, and participated in the discussions about the characters and events in the stories. Prodigy also provided her with a link to her school. She sent e-mail messages and personalized cards to friends, the computer teacher at her school, and Helen Virga.

Using her computer expertise and the wealth of resources offered through Prodigy, Shannon launched "Shannon's Stuff,"™ a small business that offered her friends and relatives a variety of services. She downloaded soap opera summaries for those die-hards who had missed a few weeks. After using Prodigy to access encyclopedia and magazine articles for her own school project on whales, Shannon was able to locate and download information for her brother's research project on William Penn. And for the sports enthusiasts among her clients, Shannon downloaded and compiled sports statistics – which kept her especially busy during the NBA playoff season.

Using the computer network Prodigy™, seventh-grader Shannon Lilly launched a small business that allowed her friends and family access to the network's many resources.

SHANNON'S STUFF™ NEWSLETTER

Contests & Prizes

Open for comments and questions

Thanks To:

Special Thanks To:

Shannon Lilly advertised her business "Shannon's Stuff" in a newsletter that she wrote and designed on her computer.

Like any smart entrepreneur, Shannon developed a price list and a production schedule. She also advertised her services in "Shannon's Stuff™ Newsletter" a publication she wrote, designed, and distributed. "She took pride in the fact that she was able to do something for others," said Jeanne Lilly.

The Prodigy network not only offered Shannon an outlet for independence and creativity – it also provided her with an opportunity not to be viewed primarily as a girl with a physical disability. "No one on the other end was aware of anything except of what she provided. She was able to express herself freely, and show her potential without any misunderstandings or uneasiness," said Jeanne Lilly.

Students Team Up in Cyberspace

After six months of reading messages on VIP – a computer network administered by the American disABLEd Foundation – Greg Walsh finally posted a message of his own about public transportation access. When someone responded, Greg "nearly jumped out of his wheelchair!" according to Kate Moore, a communication therapist at the Cotting School, a day school in Lexington, Massachusetts for children with learning, communication, and physical disabilities.

Computer networks have had a powerful effect on Greg and some of the other students with severe speech and/or physical disabilities. Because many of them have only limited opportunities to engage in conversations with people outside of their school and immediate family, the network offers these students a unique opportunity to learn a variety of skills.

How do you start a conversation with someone? How do you respond? How do you give enough information so that the reader can understand what you are trying to say? How do you word a comment or ask a question that will elicit responses? These are some of the questions that provide Kate and her students with a rich context for learning communication and social skills.

Another group of Cotting students also use the VIP network to communicate with students outside their school. Students with physical and communication disabilities in Cecelia Jones' biology class were paired with research partners from Vicky Goldberg's regular-education science class at the Brimmer and May School in Brookline, Massachusetts, a few towns away. Cecelia and Vicky had met over the network and decided to initiate a collaborative classroom project.

Each of Cecelia's students at Cotting designed and carried out an independent research project that culminated in an extensive lab report incorporating background research. After exchanging messages of introduction on the VIP network, each Cotting student described his or her project to their Brimmer and May partner. On the network over the next few months, Cotting School students continued to discuss and explain their project, their findings, and their results, while their partners asked questions, offered feedback, and made suggestions.

Next semester Cecelia and Vicky plan to repeat this project, only this time both student groups will conduct independent projects and share their findings. The teachers are also already making plans for the two student groups to meet at the end of the project.

"The students have certainly benefited from their conversations with the other students. They've had to learn to express their ideas in a way that's still social, but less intimidating than the immediacy of face-to-face interaction. And of course, it's been a real boost to their confidence, to be guiding non-disabled peers," according to Cecelia.

For many students at Brimmer and May, the project provided them with a first-time opportunity to interact with a peer who had a disability. Did the Cotting School students ever discuss their disabilities with their Brimmer and May partners during the project? "Some did, some didn't, but being disabled was the least important part of the communication," Cecelia said.

At the Cotting School – a school for children with learning, communication, and physical disabilities – students collaborate using a variety of communication tools including computer networks and eye gaze boards (pictured).

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Computer Network Resources for Students with Disabilities

DO-IT! (Disabilities, Opportunities, Internet-working, and Technology)

Through the Do-It Scholars program at the University of Washington, high school students with disabilities who have interests in science, mathematics, and engineering are provided with the tools, training, and opportunity to use the Internet to explore academic and career interests.

For information about DO-IT write, call, or e-mail:

Sheryl Burgstahler
Director, DO-IT
University of Washington
JE-25/Room 206
Seattle, WA 98195
Voice/TDD: (206) 685-DO-IT
e-mail: doit@u.washington.edu

Excerpts from student autobiographies submitted via e-mail and compiled into the DO-IT Snapshots 1994 album:

"...I have Cerebral Palsy and use my computer by entering Morse Code through a sip-and-puff device..."

"I use Read Master so I can access the computer and the Internet using my head. My interests are astronomy, art, and writing."

"The DO-IT Program gives me information about careers in the science and math world. It also gives me a way to communicate through e-mail since using the telephone is difficult for me. The Program has given me a fresh outlook on my future..."

"I am totally blind, with two glass eyes. Because of this disability, it is difficult for me to obtain information for my school work and personal enjoyment. That is, it was difficult before I entered the DO-IT Program. My computer has speech output. With Internet access I have information at my fingertips. My interests include biology, computer science, and logical reasoning and with the Internet I can study these topics. But more importantly, I have all of the information for school projects. I no longer have to get help from fellow students to do my research papers. In fact, a few have even asked me for help."

PC Pals

PC Pals is a computer bulletin board on America Online, which is "geared to teenagers who are deaf and hard of hearing (and their hearing friends, too)," according to America Online™. PC PALS includes three services – e-mail, the PC Pals Bulletin Board folder, and a monthly chat group.

For information contact:

The Alexander Graham Bell Association for the Deaf PC Pals
3417 Volta Place, NW
Washington, DC 20007
(202) 337-5220 (V/TTY)

Kidlink

Kidlink is an international networking service, accessible via the Internet, exclusively for students between the ages of 10 and 15. More than 23,000 students from over 60 countries have participated in one-on-one exchanges, group chats, topical discussions, and curriculum-based projects.

This network provides students with disabilities the opportunity to participate in discussions and activities with students from around the globe.

For information contact:

Odd de Presno
KIDLINK Project Director
opresno@extern.uio.no
or
kidlink-info@VM1.NODAK.EDU
or
KIDLINK Gopher: kids.ccit.duq.edu

More on NCIPnet

- Classroom-tested ideas for telecommunications projects
- Information on how to access the DO-IT gopher site and other online resources
- Descriptions of books, journals, and other publications providing information about telecommunications
- Help getting started using Kidlink from a member of the NCIPnet community

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For more information, contact:

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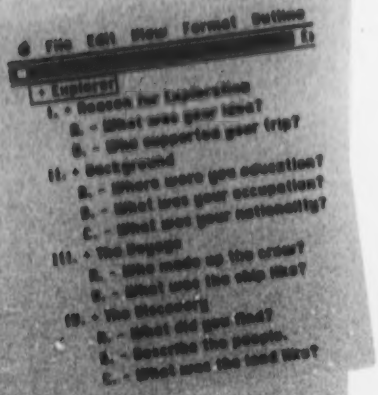
Photo Credit
Joan A. Wallace-Nelson

NCIP Profiles 4
Spring 1995

What's Inside

- How computer software tools help students with disabilities organize information
- A look at Inspiration™ – computer software that allows students to create concept maps and outlines
- How fifth graders use Inspiration to organize and write reports
- How Inspiration is used to enhance classroom discussions about books
- Information about Project SUCCESS, a University of Oregon program for middle- and high-school students with learning disabilities
- Strategies for using Inspiration in the classroom



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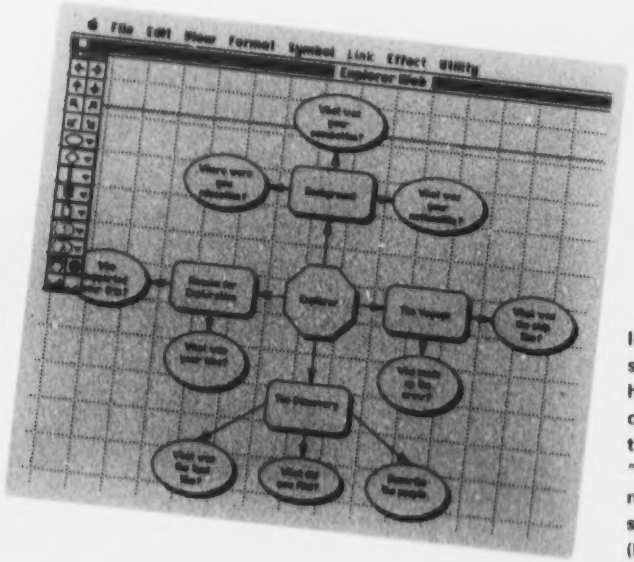
Organizing Information with Software Tools

From middle school on, students are asked to gather, prioritize, and synthesize information for research papers, oral reports, and group projects. This multistep process is frequently overwhelming for students with learning disabilities and attentional difficulties who often have trouble organizing information.

"Webs" or "concept maps" can help these students organize information and ideas. These visual outlines often appeal to students who feel constrained by the linear nature of text. When creating concept maps with pencil and paper, however, students can get frustrated with the "messiness" of this dynamic process – particularly as the shape and structure of their webs change.

Now a set of computer-software tools are available that provide these students with the flexibility they need to effectively use concept mapping and outlining strategies. One tool that has generated great interest on NCIPnet is Inspiration, a software program that enables students to easily create and revise concept maps and convert these maps to standard outlines, or vice versa. For more information about how some teachers are incorporating Inspiration into the curriculum, read on.



Inspiration is a software tool that helps students organize information into both "webs" or "concept maps" (right) and standard outlines (left).

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Integrating Information with Inspiration™

As part of Heidi Hebert's fifth-grade social studies curriculum at the Cutler School in Hamilton, Massachusetts, each student takes on the role of an explorer and then writes his or her autobiography.

When she first initiated this project, Heidi found that gathering, prioritizing, and organizing information for these autobiographies was an overwhelming process for many of her students – particularly those in her class with learning disabilities. While these students had little difficulty finding information, many had problems linking different kinds of information in logical and clear ways.

To assist students with the process, two years ago Heidi began providing her class with an outline they could fill out as they researched their topic. While this approach was adequate for some, it was frequently a disaster for the students with organizational problems – those students that it was meant to help most. By the time these students had filled out their outlines, because of poor handwriting, lack of space, and constant revising, many couldn't read what they had written and had no way of neatly reorganizing the information.

To find a more flexible strategy or tool that would help all of her students create usable outlines, Heidi teamed up with Hamilton computer coordinator Grace Meo, who introduced her students to the computer program Inspiration.

The project is launched in the computer lab where Grace teaches students how to create a multi-tiered concept map using Inspiration. Once they are comfortable with the fundamentals of the program, students work in pairs to brainstorm questions about their explorers like *Where was he born? Where did he travel?* and *What did he find?* Together, students create a simple web incorporating their questions.

Next, Grace shows students how to convert their webs into a standard hierarchical outline using one simple command. She then demonstrates how students can reorganize their outline and group similar questions together around central themes like *childhood* and *travels*. When students

Fifth-grade students at the Cutler School use Inspiration™ software to organize research reports on explorers. Before beginning to compile information, students learn how to use the program in the computer lab.

Inspiration: A Hook to Books

The collaboration between Grace Meo and Heidi Hebert is not unusual in the Hamilton-Wenham School District. Through a program called "Peer Partners" many members of the district's faculty work together to plan and implement ways to improve classroom practice.

For example, when Tena Crowley, a fifth-grade teacher at the Winthrop School in Hamilton sought ways to make class discussions about books and stories richer and more inclusive, she collaborated with her peer partners, computer specialist Grace Meo and reading specialist Cheryl Sweeney.

During a planning meeting, the team devised a strategy that employed Inspiration. Using an LCD panel, Grace projected Inspiration onto a screen at the front of the classroom. As Cheryl Sweeney led the discussion of the book *The Cay* by Theodore Taylor, Grace used Inspiration to create a web incorporating the students reflections and insights. During the discussion, prejudice and survival emerged as central themes. Working together, the students clustered their points around these topics and then were able to use this Inspiration web to write book reports.

Inspiration enriched the learning experience for children of all abilities. The teaching team noted that this strategy was particularly powerful for students in the class with learning and attention difficulties, all of whom had been more vocal than usual during the discussion.

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"Webs" created using Inspiration software offer students an alternative to standard hierarchical outlines. "Some kids just need that visual hook," said Hamilton fifth-grade teacher Heidi Hebert.

convert their standard outlines back to a web, the revised organization is reflected in the concept map. "Some kids just need that visual hook," Heidi said.

At the end of the session, students save their outlines on their own floppy disks. Back in the classroom they continue using Inspiration to make a "mega-outline" which incorporates everyone's questions. Students then begin their research with an outline that includes a comprehensive set of questions that can be answered on paper or computer, depending on their preference. This outline anchors students as they dive into books, encyclopedias, and CD-ROM resources in the classroom, at the library, and at home.

This is the second year that Heidi is using Inspiration with her fifth graders. Last year, the approach was enormously successful. "The students loved it. They contributed to the process every step of the way. By the time they had completed their research, their report was essentially written," Heidi said.

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Software Spells SUCCESS for Students

Over the past three years, Dr. Lynne Anderson-Inman and her University of Oregon colleagues have been exploring ways that computer-based study strategies can improve academic outcomes for middle- and high-school students with learning disabilities.

The adolescents participating in Project SUCCESS (Students Using Cognitively-Based Computer Enhanced Study Strategies) came to the project with a long history of school failure fueled by reading, writing, and organizational difficulties as well as a poor self-image and a reluctance to assume responsibility for their schoolwork.

Project SUCCESS participants were given a Macintosh PowerBook 145™ and taught a variety of computer-based study strategies. Students use these strategies – many of which employ Inspiration – when completing class assignments, doing homework, and studying for tests.

For example, at one Project SUCCESS site, participating high school students meet with English and global studies teacher Esther Reed for one study period each day. During this time, Esther guides students as they work together to devise new ways to use the computer tools to solve their academic problems. They use the computer to collaborate on writing projects, study together for tests, and answer questions about reading assignments. "The feeling of electricity in the room is amazing," reports Esther who also said that she has watched Project SUCCESS students' grades, self-image, and interest in the learning process soar.

When high school junior Marcie first joined Project SUCCESS, she had trouble with handwriting, spelling, and organizing information in written work. When she wrote a first draft, she was often unable to read her own writing. She also frequently misplaced her papers and had to start assignments over again. These problems were reflected in her poor grades.

But Marcie has turned her school career around with the help of Project SUCCESS. For a research paper she wrote last year on the criminal life of Jeffrey Dahmer, Marcie created an electronic outline using Inspiration that organized the information she researched around four key concepts: why people commit crimes, the influences of background and childhood on criminal behavior, Dahmer's adult life, and the crimes he committed.

The electronic outline allowed her to insert information whenever and wherever she found it, making it easy to organize and synthesize for writing. Marcie then wrote several drafts of the paper with word-processing software and used a spell check program throughout the process.

The result was a well-deserved "A" and a product that Marcie was proud of and wanted to share with her classmates. Marcie maintains that the computer tools made all the difference and that now she wouldn't ever consider writing a paper without them.

High school students participating in the University of Oregon-sponsored Project SUCCESS use a variety of computer-based study strategies to overcome academic problems.

Ideas From NCIPnet

On NCIPnet, fourth-grade teacher Audrey Ostrowski shared the following ways she uses Inspiration to teach language arts, math, and social studies.

Tuesday, October 18, 1994
NCIP Software Item
From: Audrey Ostrowski
Subject: Re(4) "Inspiration" software
To: NCIP Software

1 In the center of an Inspiration "web" Audrey writes the name of a character from a book the students have read. The students then add qualities that describe the character and examples of these qualities.

2 To reinforce math skills, Audrey writes a number in the center of a web. Students are then asked to create as many nodes as they can with problems that generate that answer.

3 When working on state reports with her class, Audrey writes the name of a state in the center of a web. Students add topics they would like to research. As they learn facts, students cluster this information around the topics. The web is eventually turned into an outline which students use for their reports.

"My fourth graders do enjoy Inspiration. Those who do not feel comfortable with it are allowed a partner. It has worked out well," Audrey said.

Study Strategies Using Inspiration™

Students participating in Project SUCCESS use Inspiration for educational purposes such as those described below.

Studying a Textbook Chapter

1 The students create an outline or concept map for each chapter by typing in headings and subheadings.

2 As students read each paragraph, they record and organize key words and phrases under the appropriate headings and subheadings.

3 Students self-test their knowledge by using a feature that allows them to hide and reveal information in the outline.

Real-Time Note Taking

Students use Inspiration to take notes "on the fly." The electronic outline helps students record and format their notes quickly. For example, students in one participating middle school use Inspiration to take notes on the information presented each day on Channel One. The graphic nature of concept mapping can reduce the amount of text students need to communicate and link ideas.

Synthesizing Information from Multiple Sources

1 After choosing a subject to research, students work with their teacher to create a topical outline that will guide their research.

2 When students read material about their subject, they insert the information under appropriate topics in the outline.

3 Students then cluster the accumulated information under each heading into conceptual units that will guide their writing.

4 Steps 2 and 3 may be repeated several times before students use a word processor to write their reports.

More on NCIPnet

- Descriptions of a variety of software tools for organizing information
- Summaries of research about graphic organizers and software tools
- Background information on webbing and concept mapping techniques
- Descriptions of successful classroom practices employing software tools

For more information, contact:

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NCIP Profiles 5
Spring 1995

Watch *Telling Tales in English and ASL* on the accompanying videotape.

What's Inside

- **How video is used to teach literacy skills**
- **How a writing program for elementary-school students who are deaf combines ASL, videos, and drawings**
- **How at-risk students participating in a Vanderbilt University Project use video to improve their reading comprehension**
- **How captioning a sitcom helped one student with language disabilities**
- **How two students who are deaf improve their literacy skills through captioning**
- **An explanation of the captioning process with information about the technology necessary to start a captioning program**

Reading, Writing, and Videotapes

The idea that video can help students improve their reading and writing skills might have been easily dismissed a generation ago. Today, however, video is a central component in a variety of strategies designed to teach literacy skills.

This profile highlights several programs using these strategies. The feature story focuses on an innovative teaching practice for primary-school students that is especially effective for children who are deaf, many of whom begin kindergarten with limited English skills. Based on the idea that students will gain a broader understanding of material if they have the chance to go over or "revisit" it in different formats, the practice revolves around a variety of activities that include the viewing and creating of videotapes, group and one-on-one discussions, drawing, and writing.

Other highlighted teaching practices focus on how students with disabilities use technology to write captions for a video. The ultimate goal of this strategy, as well as the others featured, is to give students the skills they need to become independent readers and writers.

Students and their teacher discuss how to caption a videotape – a unique multi-step process that strengthens literacy skills.

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Telling Tales in ASL and English

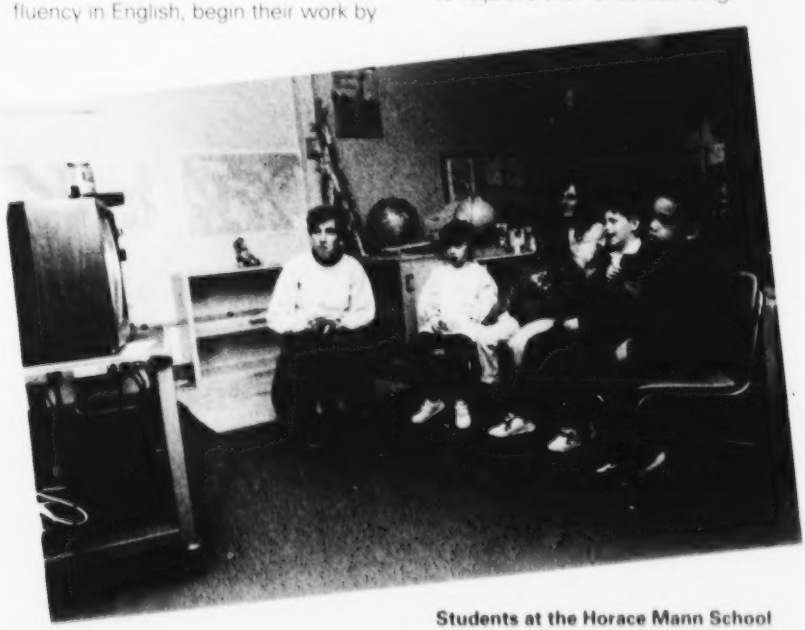
After watching a story told in American Sign Language (ASL) and then retelling it in sign on videotape, students participating in the following project write their own version of the story.

Viewing a Story

At the Horace Mann School for the Deaf and Hard of Hearing in Boston, Massachusetts, a small class of primary-school children have come to the Literacies Lab to work with reading specialist Anne Devaney on their reading and writing skills. They are young children who are deaf and who use ASL.

The students, who have varying fluency in English, begin their work by watching a story in ASL presented by a teacher or on videotape by a storyteller. The videos – which come from Horace Mann's extensive videotape library – are classic imagination-capturing tales that hearing children typically read in the early grades. "A primary goal is to make the writing process as visual as possible," said Doris Corbo, the program's curriculum specialist.

To reinforce the concepts that underlie the story, Anne leads a discussion focusing on its plot and characters. Students are asked to retell part or all of the narrative in sign language to improve their understanding.



Students at the Horace Mann School for the Deaf and Hard of Hearing watch a story told in sign language.

After Horace Mann students have seen a story told in sign language, they are videotaped retelling the story.

Creating a First Draft on Video

After watching and discussing the video, students go to a writing table to draw the story's scenes and characters. This "visual road map" will be used later when they retell the story again in writing.

While students draw, Anne takes each one aside and, using a camcorder on a tripod, videotapes him or her retelling the story in sign language. In the process, the student becomes more familiar with the structure and content of the narrative. This videotape version becomes the student's first draft.

Video: A Tool for Reading Comprehension

As part of the ongoing research initiatives of the Peabody Literacy Program at Vanderbilt University, researchers in the Cognition and Technology Group have developed an innovative teaching strategy that uses video to promote reading comprehension.

Here's how it works: At-risk students view one- to two-minute video segments about timely issues like AIDS and civil rights. Afterwards they are given three passages to read that are similar in form and content. Only one of the passages, however, accurately describes the segment. The reader is asked to read each passage carefully and to discern which is the most accurate. At any point in the process, students can review the video.

The authors emphasize that these "discrepancy passages" enable students to increase their comprehension and fluency – well-documented benefits of repeated reading.

In order to more closely approximate standard reading practice, the process is sometimes reversed. Students read passages first and then choose video segments that best represent them. This way students have an understanding of the text before viewing the video. Students can also be given readings that are designed to extend and deepen their understanding of the content, rather than describe the video.

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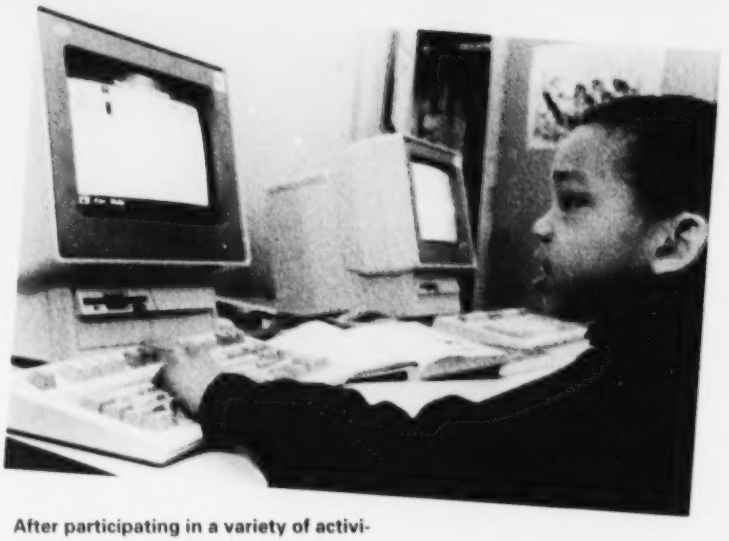
Working with Teachers and Classmates

While Anne watches the videotape with the student, she transcribes the child's sign language into English on a computer. If the student disagrees with the teacher's translation, the two discuss what the student meant and how to convey this content in written English. After the story is fully transcribed, the student prints it out and reviews it three times – alone, with another classmate, and with Anne or another teacher.

As an alternative to working with the teacher, a pair of students may watch one of their sign language drafts together and discuss its content. According to Doris, some students express themselves more easily with classmates than with teachers.

Once they have been videotaped telling a story in sign, Horace Mann students sit with their teacher and discuss how to transcribe the videotape in written English.



After participating in a variety of activities focused on the retelling of a story, Horace Mann students individually or in pairs write their own version of the story on computer.

Writing the Story

Having reviewed the content and language of the story through a variety of activities, students are now ready to write the tale themselves. Using their drawings, but without the aid of the teacher's English transcript, students go to the computer and individually or in pairs create their own version of the story in English.

While they write, teachers encourage children to take risks with language. The most important thing for these beginner writers is getting their ideas on paper – using proper spelling and grammar will come later.

Teacher Reflections

Teachers continually assess what kinds of support individual children need at each stage and what can be done to improve the process. For example, video-recording the children's version of the story was not originally part of the process. When this step was added, according to Doris, the quality of subsequent drafts dramatically improved.

As students' skills improve, steps in the process are dropped. Needing less support from the technology and their teachers, children move closer to becoming self-confident and self-sufficient writers.

Teachers in the school believe the program has significantly boosted students' enthusiasm about writing. Middle-school teachers also report that students who have participated in the project are entering their classes with better English language skills.

Watch *Telling Tales in ASL and English* on the enclosed NCIP videotape.

Captioning Helps a Student Get the Big Picture

Soon after the Brown Middle School in Newton, Massachusetts, received a captioning workstation through a federal research grant, co-teachers Sue Lesser-Seltzer and Ellen Waite and their students with language learning disabilities brainstormed how each student might use the technology.

Franklin Castillo, a student who according to Ellen "struggles with getting the whole picture," chose to caption one of his favorite sitcoms.

Rather than transcribe every word spoken – the traditional way to caption – Franklin and his teachers decided that Franklin would only describe the important action in each sequence.

After replaying the video several times, Franklin was able to clearly describe the key ideas in different parts of the story. For example, during a scene in which one character was trying to serenade an unimpressed young woman, Franklin wrote, *Steve is singing a love song to Laura. Steve really gets into the song and doesn't realize Laura has left the room.*

"I believe that this process was a true learning experience as Franklin himself began to understand the whole plot," said Ellen. "Franklin was absolutely delighted with the finished project and got a great deal of positive feedback from his classmates."

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Collaborative Captioning

At the Reingold Elementary School in Fitchburg, Massachusetts, two fifth graders who are deaf worked together to caption a videotape of Deaf Awareness Day, a citywide event attended by students who are deaf and hard of hearing from all over metropolitan Boston.

Since the video had no audio and only some sign language, Timmy and Jonathan acted as reporters, using captions to describe and comment on the action in the video. For example, when the camera caught a boy falling down during the potato sack race, the students wrote, *Poor Danny, he fell. Better luck next time.*

The students easily learned how to use the captioning equipment and independently carried out every step in the process. The students' teacher Sheila Donahue, an educator with the CAPS Collaborative in western Massachusetts, helped with revisions, encouraging Timmy and Jonathan to clarify the text and use proper grammar and spelling. Seven weeks after they began the process, the tape was finally captioned and shared with other students, deaf and hearing. The boys also took the tapes home.

Sheila says that Timmy and Jonathan were always excited to work on the project and that it significantly helped their comprehension and writing skills. "Being able to play and replay the video has given the boys time to notice details, and this is reflected in their written language," reports Sheila. "I've seen improvement in their punctuation, use of verb tenses, and the richness of their vocabulary."

Students and Captioning

How Do Students Caption?

Creating a captioned video involves watching a videotape, writing text to match, then combining the text and video. The process sometimes begins with a videotape developed and produced by a group of students and their teacher.

Whatever the videotape being captioned, students use a VCR to play, pause, and search the tape while they compose corresponding text using a word processor. The text may be a direct transcript of the audio, a translation from one language to another like American Sign Language to English, or a general description.

At the beginning of the writing process, students often discuss the content of the video with classmates or a teacher. After they enter text using a word processor, they print out their work and make revisions as many times as necessary.

When students are satisfied with their text, they combine it with the video – a process that can be manual or automated. The text and video are routed through a piece of equipment called a **character generator** and recorded using a second VCR.

What Equipment and Software Are Needed?

A basic captioning workstation consists of a personal computer, two VCRs (one for playback and one for record), and a character generator that allows text to be superimposed onto video. A computer monitor, a video monitor, and a printer are also needed. Some systems require a time-code reader.

When evaluating a potential captioning system, keep in mind whether the word processing software suits the needs of your students and whether the system has the ability to create and read time code (though this function may be unnecessary for your purposes).

Staff at WGBH – the first organization to caption television and a leader in the field – can answer questions about captioning options for schools and provide the names of hardware and software suppliers. This kind of information can also be found on NCIPnet. At WGBH, address your questions to:

Geoff Freed
CPB/WGBH National Center
for Accessible Media
125 Western Avenue
Boston, Mass. 02134
Voice and TTY: (617) 492-9258

When students caption videotapes, they use a VCR (right) to stop and start tapes, and a word processor (left) to compose corresponding text.

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